

CLAIMS

1. An optical functional waveguide comprising:
 - a substrate;
 - a clad formed on said substrate;
 - a core which is formed in said clad and serves as an optical path;
 - a plurality of groove structures formed so as to align at a predetermined interval along the optical path and fragmentize the optical path and being filled with a material having a refractive index temperature coefficient different from that of said core; and
 - a heater electrode interposed between said plurality of groove structures provided along the optical path.
2. An optical functional waveguide comprising:
 - a substrate;
 - a clad formed on said substrate;
 - a core which is formed in said clad and serves as an optical path;
 - a plurality of lens-shaped groove structures formed so as to align at a predetermined interval along the optical path and fragmentize the optical path and filled with a material having a refractive index different from that of said core;

and

a heater electrode interposed between said plurality of groove structures provided along the optical path.

3. An optical functional waveguide according to claim 1 or 2, wherein at least one of the end faces of said plurality of groove structures is tilted from a position perpendicular to the optical path.

4. An optical modulator comprising the optical functional waveguide according to claim 1 and modulating amplitude or phase of light.

5. An arrayed waveguide grating comprising the optical functional waveguide according to claim 2 in a slab waveguide.

6. A dispersion compensation circuit comprising the optical functional waveguide according to claim 2 in the vicinity of a coupling portion that two arrayed waveguide gratings are coupled to each other in a cascade.

7. A dispersion compensation circuit comprising:
a mirror provided in a waveguide and arranged in the

vicinity of a spectrum plane; and

the optical functional waveguide according to claim 2 arranged in the vicinity of said mirror.

8. An optical functional waveguide comprising:

a substrate;

a clad formed on said substrate;

a core which is formed in said clad and serves as an optical path; and

a plurality of groove structures formed so as to align at a predetermined interval along the optical path and fragmentize the optical path and being filled with a material having two or more refractive indexes different from each other, the refractive indexes differing from that of said core.

9. An optical functional waveguide according to claim 2, wherein said groove structure is provided at a slab waveguide side of a coupling portion of the slab wave guide and a single mode waveguide.

10. An optical functional waveguide comprising:

a substrate;

a clad formed on said substrate;

a core which is formed in said clad and serves as an optical path;

a plurality of wedge-shaped groove structures formed so as to align at a predetermined interval along the optical path and fragmentize the optical path and filled with a material having a refractive index different from that of said core; and

a heater electrode interposed between said plurality of groove structures provided along the optical path.